

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

Conditional Major Draft No. F-04-004  
WEYERHAEUSER COMPANY  
5150 NASHVILLE ROAD, BOWLING GREEN KY  
January 29, 2004  
BRIAN BALLARD, REVIEWER  
Plant I.D. # 021-227-00081  
Application Log # 56008

**SOURCE DESCRIPTION:**

The Weyerhaeuser South plant located in Bowling Green, KY manufactures corrugated shipping containers. The emissions at this facility are due to corrugated board production, flexographic printing, the scoring, slitting and cutting of corrugated board and the gluing of manufactured joints to make corrugated containers.

**CORRUGATED BOARD PRODUCTION**

The primary operation in a shipping container plant is the production of sheets of corrugated board; this is done on a corrugator. This operation begins with fluting or corrugating of the center paper called medium. The medium is shipped in large rolls. The next step is the bonding of the inner and outer facings or liners to the fluted medium. These liners are also received in large rolls. Liners are made of several weights or thickness, allowing the manufacture of various qualities and weights of corrugated board. As the corrugated board leaves the corrugator, it has been slit, scored and cut to predetermined lengths. The material used to bond the medium to the liner is derived from starch.

A starch silo is located at the facility and has some insignificant PM/PM<sub>10</sub> emissions. Emissions from starch mixing are included with emissions from corrugated board production. There are emissions of formaldehyde, VOC and PM/PM<sub>10</sub> from the corrugator. Weyerhaeuser provided emission calculations for these pollutants to the Division. Emission factors for corrugator/starch mixing operations are in units of pounds per 1000 ft<sup>2</sup> of corrugated cardboard.

Particulate emissions from the corrugator will comply with 401 KAR 59:010 based on information submitted by Weyerhaeuser and the density of cardboard that will potentially be used. Calculations demonstrating this are as follows:

$$\begin{aligned}\text{Throughput} &= \text{Potential Corrugator capacity (1000 ft}^2\text{) x weight of lightest paperboard} \\ &= (5,580,120 \text{ msf/yr x 100 lb/msf}) / 8760 \text{ hrs/yr} / 2000 \text{ lb/ton} = 31.85 \text{ tons/hr} \\ \text{Allowable PM (lb/hr)} &= 3.59 \times (\text{throughput (tons/hr)}) ^{0.62} \\ &= 3.59 \times (31.85) ^{0.62} = 30.69 \text{ lb PM/hr}\end{aligned}$$

The potential to emit for PM from the corrugator based on information submitted by Weyerhaeuser:

$$\text{Potential PM (lb/hr)} = (5,580,120 \text{ msf/yr x 0.006 lbs/msf}) / 8760 \text{ hrs/yr} = 3.822 \text{ lbs/hr}$$

Based on this information, it will be unnecessary to track PM emissions from the corrugator.

## FINISHING DEPARTMENT

The Finishing Department consists of two rotary die cutters, three flexo folder gluers, one four-color printer, two platen die cutters, two color print stations, two folder gluers, three hot melt glue machines and one post folder gluer with hot melting. The permit will authorize the addition/construction of one die cutter station, one UV print station, one dryer for print station, two hot melt glue machines, an auto box packer and an ink blending kitchen. Emissions originate from inks, varnishes, adhesives and additives. As with the corrugator, emission factors are in units of pounds per 1000 ft<sup>2</sup> of corrugated board. Emissions are calculated based on the finishing department as a whole, not by each emission point.

The emissions are estimated this way because VOC emissions from the various machines vary widely depending on customer specifications, ink coverage, and paper printing properties. The most complete and accurate way to calculate emissions is by understanding the quantities and qualities of all inks used during the month in regards to vendor supplied VOC and HAP data. Weyerhaeuser will track this data in spreadsheets and use it to calculate twelve month rolling averages for VOCs and HAPs.

The potential to emit for this facility has been estimated using Weyerhaeuser's method of calculating VOC emissions, which is consistently applied across the U.S. at more than 100 corrugated box plants. To calculate potential to emit, the major assumptions are one (1.0) pound VOC per 1000 ft<sup>2</sup>, 100% ink coverage, maximum machine rate, and 8760 hours per year of operation. Ink is applied one color at a time, not overlaid.

## SCRAP PAPER HANDLING SYSTEM

Waste containerboard finishing machine dust is sent to a bag house and scrap trench; which is then handled by a high-efficiency, internally vented, classifier system that includes a shredder/baler and baghouse. Smaller size trim wastes are collected by the scrap trench and transferred to a separate baghouse with the captured waste introduced back into the main classifier system. Since the scrap paper handling system does not vent to the atmosphere, it is not included in the permit.

## STARCH SILO

Particulate emissions from the starch silo are based on an AP-42 factor for product transfer and conveying. The starch silo was determined to be an insignificant activity.

## HISTORY

This plant has been operating under the guidance of permit number F-95-019 (Revision 3) issued April 25, 2000. This permit expired on February 12, 2001. Weyerhaeuser submitted a renewal application on August 14, 2000 (Log No. 53111), which was approximately 6 months before the expiration date as required in the permit. This application was deemed complete by the DAQ on January 12, 2001.

An updated application for this source was received September 19, 2003 (Log No. 56008) and was deemed complete January 29, 2004. Weyerhaeuser owns another containerboard plant in Warren County that is approximately eight miles from this facility. The Division has determined that the two plants shall be treated as separate sources for PSD applicability purposes.

**COMMENTS:**

Weyerhaeuser submitted modeling results for the Bowling Green South facility. Weyerhaeuser used EPA SCREEN3 modeling for emissions of pollutants listed on EPA's Region Nine Preliminary Remedial Goals (PRGs) for toxics exposure to Ambient Airways. Emissions from the starch mixing, corrugator and the finishing department are vented through five (5) equally sized 36" diameter ceiling vent fans. In the SCREEN3 model these fans were merged into a single stack to account for the emission of toxics from the use of starches, adhesives, inks, additives and cleaners used in the manufacturing process. The modeling demonstration indicated that offsite concentrations of pollutants from Weyerhaeuser's Bowling Green (North) Plant are less than 1/4<sup>th</sup> the maximum acceptable limit for toxics exposure.

**APPLICABLE REGULATIONS:**

401 KAR 63:060, List of hazardous air pollutants, petition process, lesser quantity designations, and source category list.

401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances, applies to the potentially hazardous matter and toxic substance emissions from affected facilities.

401 KAR 59:010, Particulate Matter, applies to the particulate matter emissions from affected facilities constructed on or after July 2, 1975.

Conditional Major limits will preclude applicability of 40 CFR 63, Subpart KK, National Emission Standards for Hazardous Air Pollutants for the Printing and Publishing Industry.

40 CFR Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

**EMISSION AND OPERATING CAPS DESCRIPTION:**

Weyerhaeuser Company has requested voluntary permit limits of less than 90.0 tons per year of volatile organic compounds (VOC), 9.0 tons per year of individual hazardous air pollutant (HAP) and combined HAPs.

**PERIODIC RECORDKEEPING:****Boiler EP01**

The permittee shall maintain monthly records of the purchase and usage of the source-wide volume of natural gas.

**Corrugator/Starch Mixing EP02**

- A. The permittee shall maintain monthly records of the 1000 ft<sup>2</sup> of corrugated board produced. VOC emissions shall be calculated and recorded on a *monthly* basis. These records shall be summarized in tons per month VOC emissions; subsequently, tons of VOC emissions per rolling 12-month period shall be recorded. In addition, these records shall demonstrate compliance with VOC emission limitations listed herein for the conditional major limitations. These records, as well as purchase orders and invoices for all VOC containing materials, shall be maintained on site for a period of five years from the date the data was collected and shall be provided to the Division upon request.

**PERIODIC RECORDKEEPING (Continued):**

Corrugator/Starch Mixing EP02

- B. The permittee shall maintain monthly records of the purchase and usage of the starch additives or any HAP containing material. HAP emissions shall be calculated and recorded on a *monthly* basis. These records shall be summarized in tons per month HAP emissions; subsequently, tons of HAP emissions per rolling 12-month period shall be recorded. In addition, these records shall demonstrate compliance with HAP emission limitations listed herein for the conditional major limitations. These records, as well as purchase orders and invoices for all HAP containing materials, shall be maintained on site for a period of five years from the date the data was collected and shall be provided to the Division upon request.

Finishing Department EP03 – EP16

The permittee shall maintain monthly records of the purchase and usage of the inks, coatings, varnishes and adhesives or any VOC/HAP containing material. VOC/HAP emissions shall be calculated and recorded on a *monthly* basis. These records shall be summarized in tons per month VOC/HAP emissions; subsequently, tons of VOC/HAP emissions per rolling 12-month period shall be recorded. In addition, these records shall demonstrate compliance with VOC/HAP emission limitations listed herein for the conditional major limitations. These records, as well as purchase orders and invoices for all VOC/HAP containing materials, shall be maintained on site for a period of five years from the date the data was collected and shall be provided to the Division upon request.

**OPERATIONAL FLEXIBILITY: NA**

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.